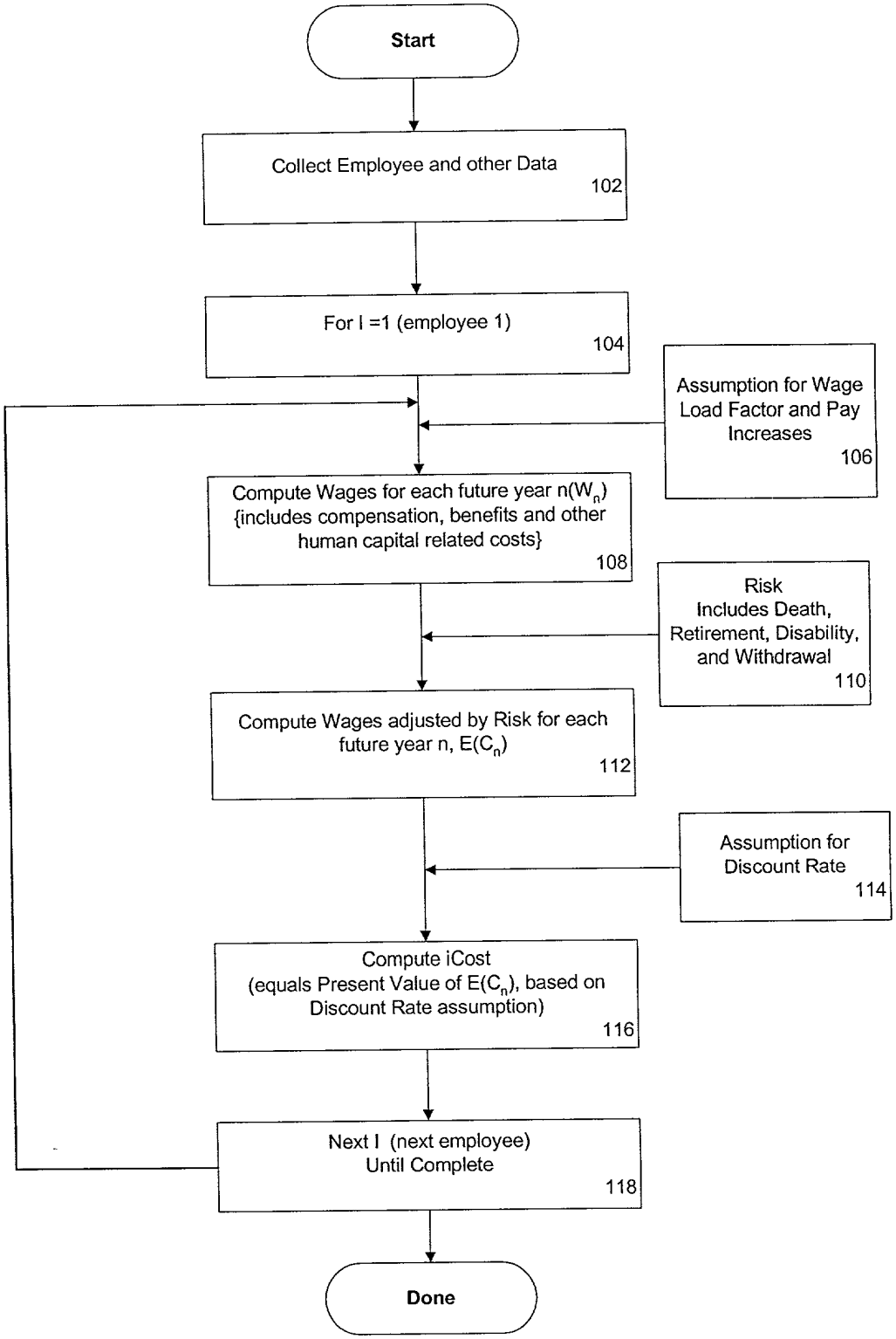
Start
Collect Employee and other Data
102
For I =1 (employee 1)
104
Assumption for Wage Load Factor and Pay Increases
106
Compute Wages for each future year n(W_n) {includes compensation, benefits and other human capital related costs}
108
Risk
Includes Death, Retirement, Disability, and Withdrawal
110
Compute Wages adjusted by Risk for each future year n, E(C_n)
112
Assumption for Discount Rate
114
Compute iCost
(equals Present Value of E(C_n), based on Discount Rate assumption)
116
Next I (next employee)
Until Complete
118
Done

FIG. 1

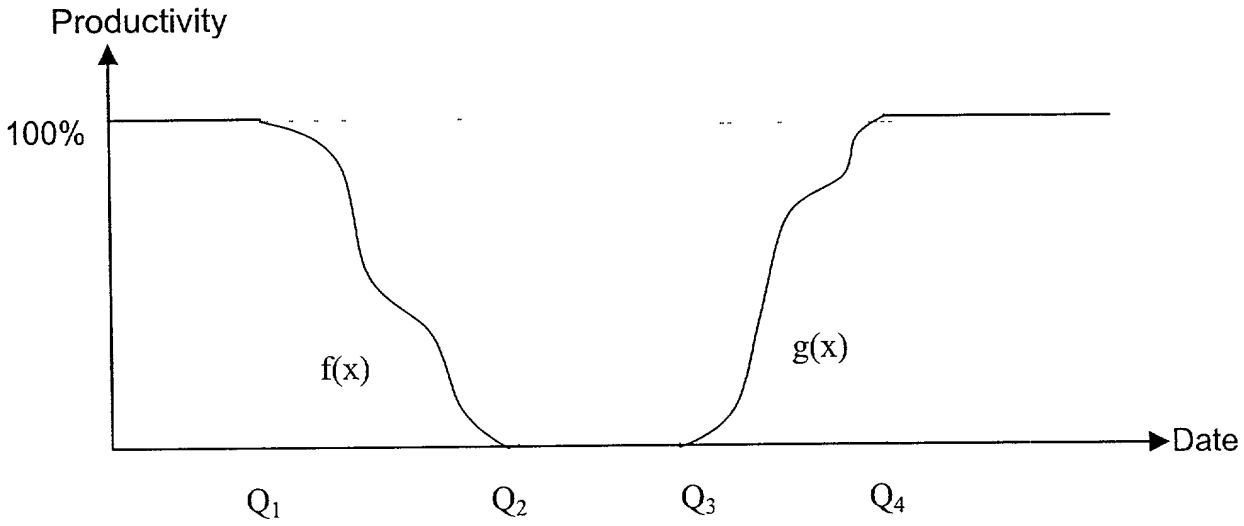

FIG. 2

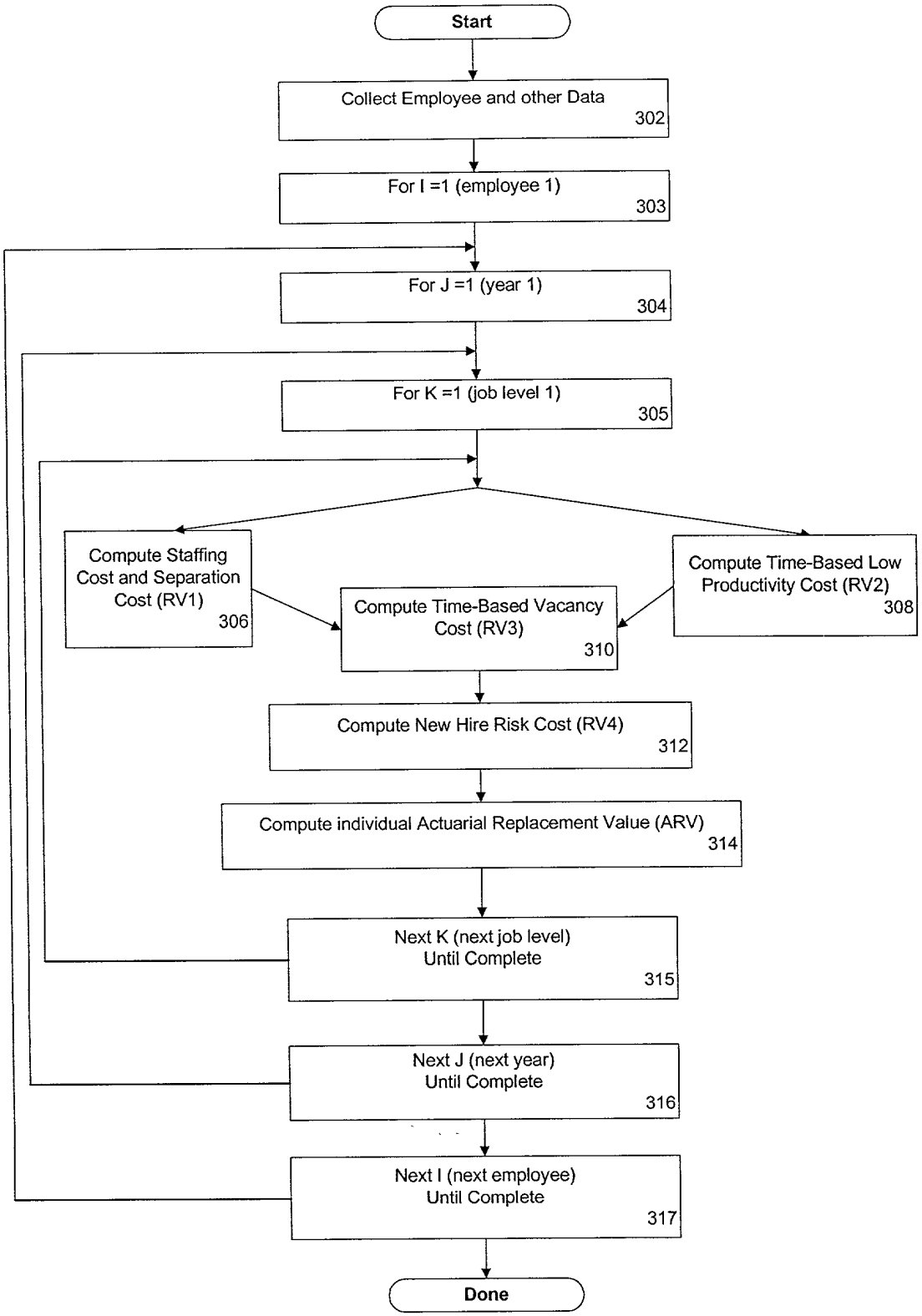
Start
Collect Employee and other Data
302
For I =1 (employee 1)
303
For J =1 (year 1)
304
For K =1 (job level 1)
305
Compute Staffing Cost and Separation Cost (RV1)
306
Compute Time-Based Vacancy Cost (RV3)
310
Compute Time-Based Low Productivity Cost (RV2)
308
Compute New Hire Risk Cost (RV4)
312
Compute individual Actuarial Replacement Value (ARV)
314
Next K (next job level) Until Complete
315
Next J (next year) Until Complete
316
Next I (next employee) Until Complete
317
Done

FIG. 3

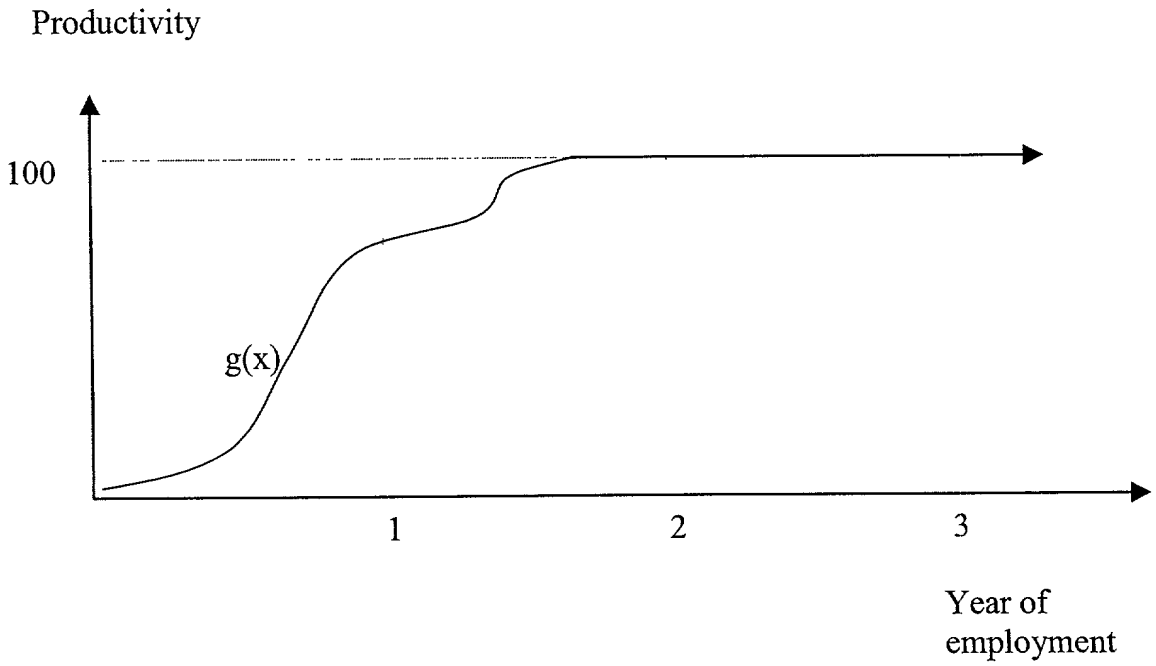

FIG. 4

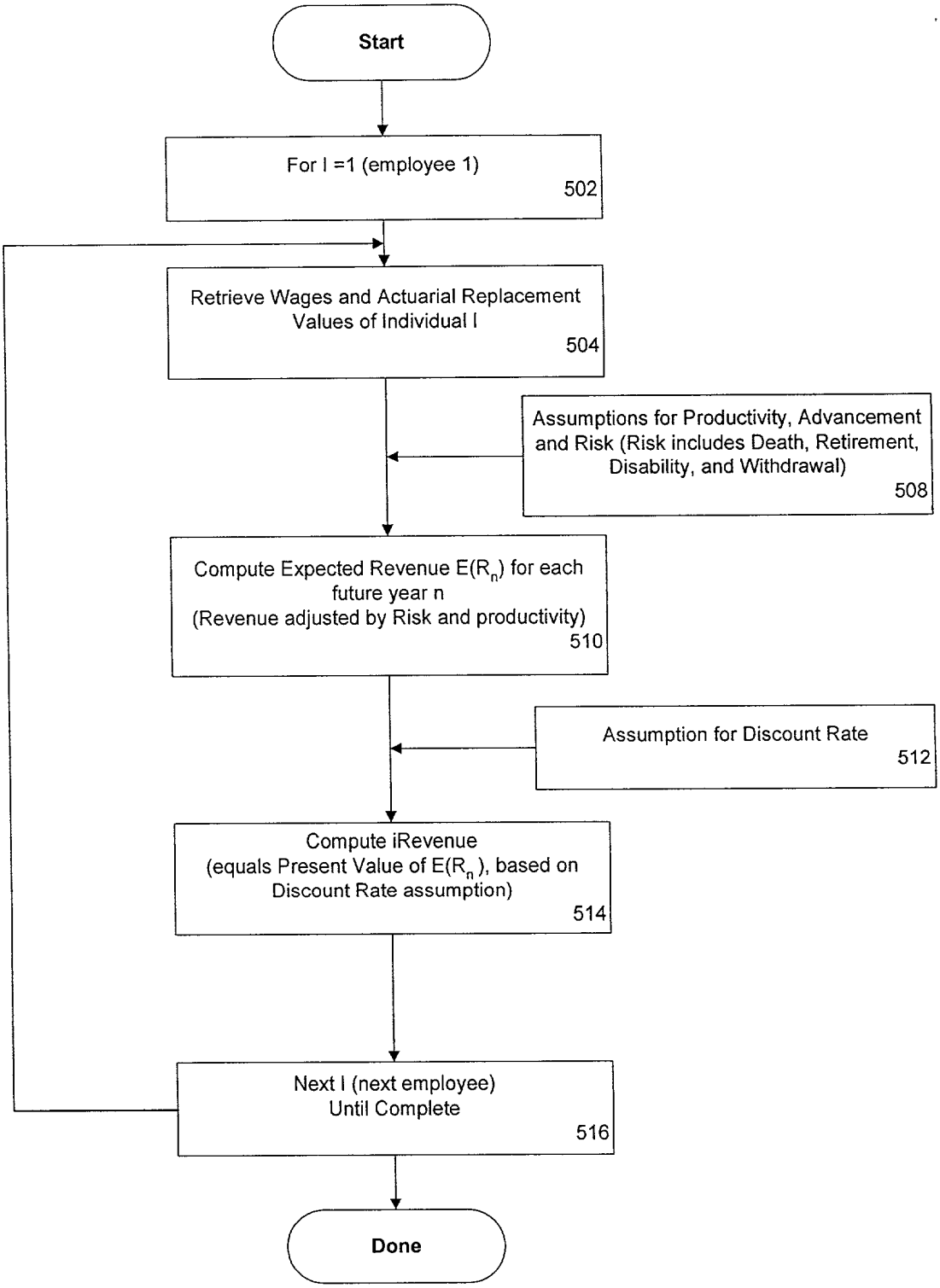
Start
For I =1 (employee 1)
502
Retrieve Wages and Actuarial Replacement Values of Individual I
504
Assumptions for Productivity, Advancement and Risk (Risk includes Death, Retirement, Disability, and Withdrawal)
508
Compute Expected Revenue E(Rn) for each future year n
(Revenue adjusted by Risk and productivity)
510
Assumption for Discount Rate
512
Compute iRevenue
(equals Present Value of E(Rn), based on Discount Rate assumption)
514
Next I (next employee)
Until Complete
516
Done

FIG. 5

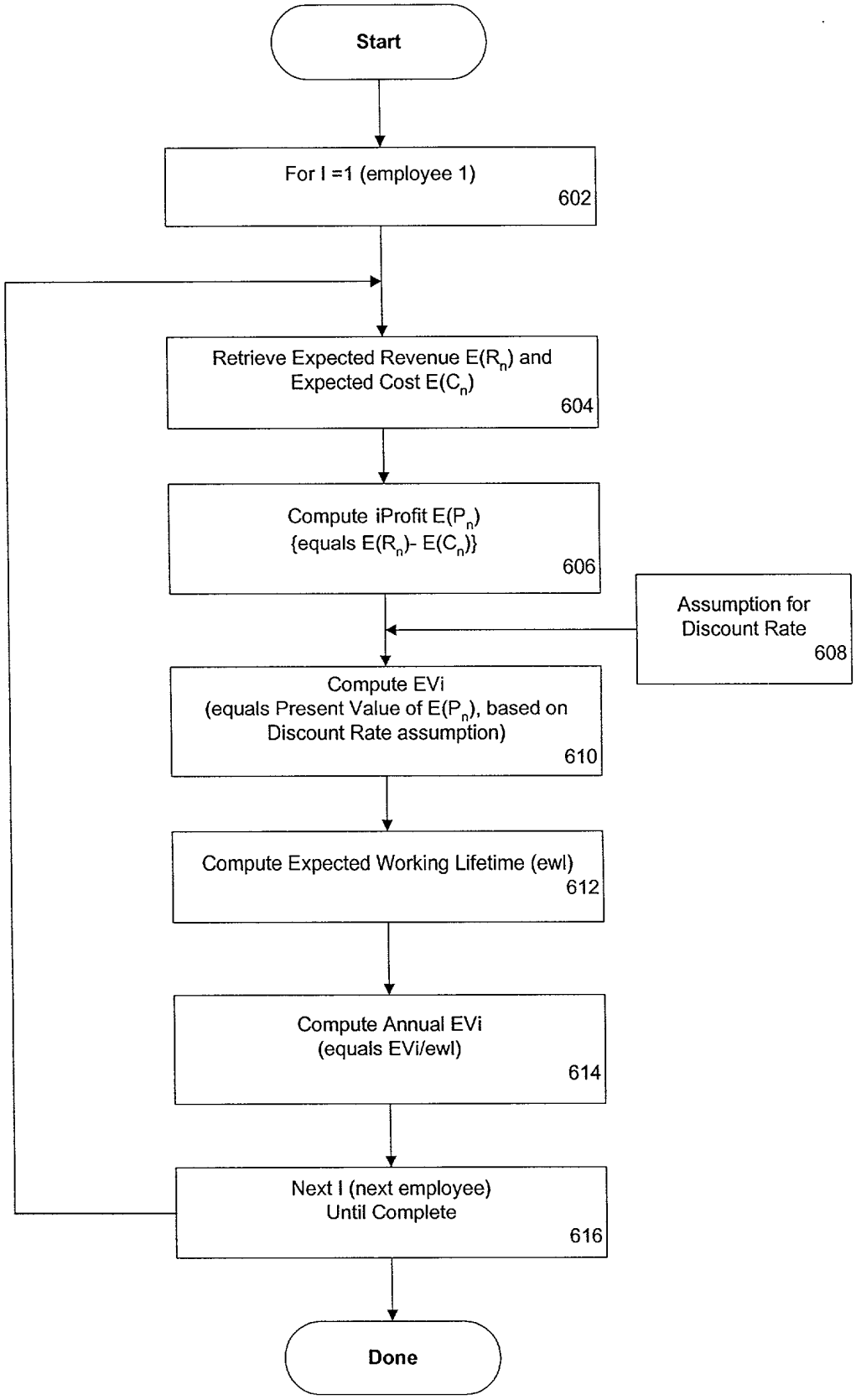
Start
For I =1 (employee 1)
602
Retrieve Expected Revenue E(Rn) and Expected Cost E(Cn)
604
Compute iProfit E(Pn) {equals E(Rn)- E(Cn)}
606
Assumption for Discount Rate
608
Compute EVi (equals Present Value of E(Pn), based on Discount Rate assumption)
610
Compute Expected Working Lifetime (ewl)
612
Compute Annual EVi (equals EVi/ewl)
614
Next I (next employee) Until Complete
616
Done

FIG. 6

Figure 7A-1. Sample Calculation of Actuarial Replacement Value and Actuarial Replacement Wage Load Factor by Job Level for the first three years for Employee 1

Current Job Level			1					
Date of Birth			1/1/1978					
Date of Hire			1/1/1997					
Gender			Male					
Year			**1**	**2**	**2**	**3**	**3**	**3**
Job Level			1	1	2	1	2	3
Pay			$38,462	$40,769[1]	$40,769	$43,215[1]	$43,215	$43,215
Wage = Pay x 1.3			$50,000	$53,000	$53,000	$56,180	$56,180	$56,180
Dollar-Based Costs								
	A	Based on Wage	$3,500[2]	$3,710[2]	$5,300[3]	$3,933[2]	$5,618[3]	$5,618[3]
	B	Not based on Wage	$1,105	$1,138[4]	$11,742[5]	$1,172[4]	$12,094[4]	$16,550[6]
Time-Based Low Productivity Costs (based on equivalent unproductive days):								
	C	New Hire low productivity – days	70	70	155	70	155	190
	D	Pre-separation low productivity – days	2	2	5	2	5	10
	E	Internal Required Rate of Return	10%	10%	10%	10%	10%	10%
Time-Based Vacancy Cost:								
	F	Vacancy (time-to-start) – days	78	78	112	78	112	112
New Hire Risk Cost:								
	G	EWL for existing employee	10.6	10.8	10.8	11.1	11.1	11.1
	H	EWL for replacement (new employee)	7.1	7.2	7.2	7.4	7.4	7.4
Actuarial Replacement Value Development:								
	I	Wages	$50,000	$53,000	$53,000	$56,180	$56,180	$56,180
	J	Equivalent Unproductive Days, other than vacancy = [C+D]	72	72	160	72	160	200
RV[1]	K	Dollar Based Costs Total = [A + B]	$4,605	$4,848	$17,042	$5,105	$17,712	$22,168
RV[2]	L	Time-Based Low Productivity Costs = (J/365)*[I*(1+E)]	$10,849	$11,500	$25,556	$12,190	$27,090	$33,862
RV[3]	M	Time-Based Vacancy Cost = (F/365)*[K+L]	$3,302	$3,494	$13,071	$3,696	$13,747	$17,193
RV[4]	N	New Hire Risk Cost = [K + L + M]*[G/H –1]	$9,246	$9,921	$27,835	$10,496	$29,275	$36,612
ARV	**O**	**Actuarial Replacement Value = K + L + M + N**	$28,002	$29,763	$83,504	$31,487	$87,824	$109,835
	P	ARV as wage load factor = [O ÷ I]	0.56	0.56	1.58	0.56	1.56	1.96
	Q	**Actuarial Revenue wage load factor = [1+ P]**	**1.56**[7]	**1.56**	**2.58**[7]	**1.56**[7]	**2.56**[7]	**2.96**[7]

[1] Previous year pay increased due to inflation and merit (assumed to be 6% per year)

[2] 7% of Wage

[3] 10% of Wage

[4] Previous year figure increased by inflation (assumed to be 3% per year)

[5] $ 11,400 in 2001 increased by inflation (assumed to be 3% per year)

[6] $ 15,600 in 2001 increased by inflation (assumed to be 3% per year)

[7] ARWLF by Job Level is used as one of the inputs to Figure 7B (row C)

Figure 7A-2. Sample Calculation of Actuarial Replacement Value and Actuarial Replacement Wage Load Factor by Job Level for the first three years for Employee 2

Current Job Level			2				
Date of Birth			1/1/1957				
Date of Hire			1/1/1996				
Gender			Female				
Year			**1**	**2**	**2**	**3**	**3**
Job Level			2	2	3	2	3
Pay			$76,923	$81,538[1]	$81,538	$86,431[1]	$86,431
Wage = Pay x 1.3			$100,000	$106,000	$106,000	$112,360	$112,360
Dollar-Based Costs							
	A	Based on Wage	$10,000[2]	$10,600[2]	$10,600[2]	$11,236[2]	$11,236
	B	Not based on Wage	$11,400	$11,742[3]	$16,068[4]	$12,094[3]	$16,550
Time-Based Low Productivity Costs (based on equivalent unproductive days):							
	C	New Hire low productivity – days	155	155	190	155	190
	D	Pre-separation low productivity – days	5	5	10	5	10
	E	Internal Required Rate of Return	10%	10%	10%	10%	10%
Time-Based Vacancy Cost:							
	F	Vacancy (time-to-start) – days	112	112	112	112	112
New Hire Risk Cost:							
	G	EWL for existing employee	11.9	11.3	11.3	10.6	10.6
	H	EWL for replacement (new employee)	11.0	10.5	10.5	9.9	9.9
Actuarial Replacement Value Development:							
	I	Wages	$100,000	$106,000	$106,000	$112,360	$112,360
	J	Equivalent Unproductive Days, other than vacancy = [C+D]	160	160	200	160	200
RV[1]	K	Dollar Based Costs Total = [A + B]	$21,400	$22,342	$26,668	$23,330	$27,786
RV[2]	L	Time-Based Low Productivity Costs = (J/365)*[I*(1+E)]	$48,219	$51,112	$63,890	$54,179	$67,724
RV[3]	M	Time-Based Vacancy Cost = (F/365)*[K+L]	$21,363	$22,539	$27,788	$23,784	$29,307
RV[4]	N	New Hire Risk Cost = [K + L + M]*[G/H –1]	$7,444	$7,314	$9,017	$7,162	$8,825
ARV	**O**	**Actuarial Replacement Value = K + L + M + N**	$98,426	$103,307	$127,363	$108,455	$133,642
	P	Actuarial Replacement Value as wage load factor = [O ÷ I]	0.98	0.97	1.20	0.97	1.19
	Q	**Actuarial Revenue wage load factor = [1+ P]**	**1.98**[5]	**1.97**[5]	**2.20**[5]	**1.97**[5]	**2.19**

[1] Previous year pay increased due to inflation and merit (assumed to be 6% per year)

[2] 10% of Wage

[3] Previous year figure increased by inflation (assumed to be 3% per year)

[4] $ 15,600 in 2001 increased by inflation (assumed to be 3% per year)

[5] ARWLF by Job Level is used as one of the inputs to Figure 7B (row C)

Figure 7B. Sample Calculation of Weighted Average ARWLF

	Employee 1				Employee 2			
A								
	Year	1	2	3		1	2	3
1	Job Level 1				Job Level 2			
	Age	23	24	25	Age	44	45	46
	Service	3	4	5	Service	5	6	7
	Headcount	1.00000	0.80000	0.60000	Headcount	1.00000	0.61000	0.28670
	Promoted to Level 2	0.20000	0.25000	0.35000	Promoted to Level 3	0.39000	0.53000	0.72000
	Promoted headcount	0.20000	0.20000	0.21000	Promoted headcount	0.39000	0.32330	0.20642
2	Job Level 2				Job Level 3			
	Service		0	1				
	Headcount		0.20000	0.19000	Headcount		0.39000	0.39000
	Promoted to Level 3		0.05000	0.14000				
	Promoted headcount		0.01000	0.02660				
3	Job Level 2				Job Level 3			
	Service			0				
	Headcount			0.20000	Headcount			0.32330
	Promoted to Level 3			0.06000				
	Promoted headcount			0.01200				
4	Job Level 3							
	Headcount			0.01000				
B								
	$P_n(1)$	1.00000	0.80000	0.60000	$P_n(1)$	0.00000	0.00000	0.00000
	$P_n(2)$	0.00000	0.20000	0.39000	$P_n(2)$	1.00000	0.61000	0.28670
	$P_n(3)$	0.00000	0.00000	0.01000	$P_n(3)$	0.00000	0.39000	0.71330
	Total	1.00000	1.00000	1.00000	Total	1.00000	1.00000	1.00000
C								
	$ARWLF_n(1)$	1.56	1.56	1.56	$ARWLF_n(1)$			
	$ARWLF_n(2)$		2.58	2.56	$ARWLF_n(2)$	1.98	1.97	1.97
	$ARWLF_n(3)$			2.96	$ARWLF_n(3)$		2.2	2.19
	$ARWLF_n$	1.56	1.76	1.96	$ARWLF_n$	1.98	2.06	2.13

Figure 7C-1. Sample Calculation of EVi for Employee 1 (page 1)

Date	Age	Service	Annual Salary	Salary Increase	Wage Salary Multiple	Wage	Productivity Factor	Wage Load Factor ARWLF	Minimum Revenue Potential
			(1)		(2)	(3) = (1) x (2)	(4)	(5)	(6) = (3) x (4) x (5)
1/1/2001	23	4	$38,462	0.06	1.30	$50,000	1.00	1.560	$78,000
1/1/2002	24	5	$40,769	0.06	1.30	$53,000	1.00	1.760	$93,280
1/1/2003	25	6	$43,215	0.06	1.30	$56,180	1.00	1.960	$110,113
1/1/2004	26	7	$45,808	0.06	1.30	$59,551	1.00	1.999	$119,054
1/1/2005	27	8	$48,557	0.06	1.30	$63,124	1.00	2.039	$128,721
1/1/2006	28	9	$51,470	0.06	1.30	$66,911	1.00	2.080	$139,173
1/1/2007	29	10	$54,558	0.06	1.30	$70,926	1.00	2.122	$150,474
1/1/2008	30	11	$57,832	0.06	1.30	$75,181	1.00	2.164	$162,693
1/1/2009	31	12	$61,302	0.06	1.30	$79,692	1.00	2.207	$175,903
1/1/2010	32	13	$64,980	0.06	1.30	$84,474	1.00	2.251	$190,186
1/1/2011	33	14	$68,879	0.06	1.30	$89,542	1.00	2.296	$205,630
1/1/2012	34	15	$73,011	0.06	1.30	$94,915	1.00	2.342	$222,327
1/1/2013	35	16	$77,392	0.06	1.30	$100,610	1.00	2.389	$240,380
1/1/2014	36	17	$82,036	0.06	1.30	$106,646	1.00	2.437	$259,899
1/1/2015	37	18	$86,958	0.06	1.30	$113,045	1.00	2.486	$281,002
1/1/2016	38	19	$92,175	0.06	1.30	$119,828	1.00	2.535	$303,820
1/1/2017	39	20	$97,706	0.06	1.30	$127,017	1.00	2.586	$328,490
1/1/2018	40	21	$103,568	0.06	1.30	$134,639	1.00	2.638	$355,163
1/1/2019	41	22	$109,782	0.06	1.30	$142,717	1.00	2.691	$384,002
1/1/2020	42	23	$116,369	0.06	1.30	$151,280	1.00	2.744	$415,183
1/1/2021	43	24	$123,351	0.06	1.30	$160,357	1.00	2.799	$448,896
1/1/2022	44	25	$130,752	0.06	1.30	$169,978	1.00	2.855	$485,347
1/1/2023	45	26	$138,597	0.06	1.30	$180,177	1.00	2.912	$524,757
1/1/2024	46	27	$146,913	0.06	1.30	$190,987	1.00	2.971	$567,367
1/1/2025	47	28	$155,728	0.06	1.30	$202,447	1.00	3.030	$613,437
1/1/2026	48	29	$165,072	0.06	1.30	$214,593	1.00	3.091	$663,248
1/1/2027	49	30	$174,976	0.06	1.30	$227,469	1.00	3.153	$717,104
1/1/2028	50	31	$185,475	0.06	1.30	$241,117	1.00	3.216	$775,333
1/1/2029	51	32	$196,603	0.06	1.30	$255,584	1.00	3.280	$838,290
1/1/2030	52	33	$208,399	0.06	1.30	$270,919	1.00	3.345	$906,359
1/1/2031	53	34	$220,903	0.06	1.30	$287,174	1.00	3.412	$979,956
1/1/2032	54	35	$234,157	0.06	1.30	$304,405	1.00	3.481	$1,059,528
1/1/2033	55	36	$248,207	0.06	1.30	$322,669	1.00	3.550	$1,145,562
1/1/2034	56	37	$263,099	0.06	1.30	$342,029	1.00	3.621	$1,238,581
1/1/2035	57	38	$278,885	0.06	1.30	$362,551	1.00	3.694	$1,339,154
1/1/2036	58	39	$295,618	0.06	1.30	$384,304	1.00	3.768	$1,447,893
1/1/2037	59	40	$313,356	0.06	1.30	$407,362	1.00	3.843	$1,565,462
1/1/2038	60	41	$332,157	0.06	1.30	$431,804	1.00	3.920	$1,692,578
1/1/2039	61	42	$352,086	0.06	1.30	$457,712	1.00	3.998	$1,830,015
1/1/2040	62	43	$373,211	0.06	1.30	$485,175	1.00	4.078	$1,978,612
1/1/2041	63	44	$395,604	0.06	1.30	$514,285	1.00	4.160	$2,139,276
1/1/2042	64	45	$419,340	0.06	1.30	$545,143	1.00	4.243	$2,312,985
1/1/2043	65	46	$0	0.06	1.30	$0	1.00	4.328	$0

Figure 7C-1. Sample Calculation of EVi for Employee 1 (page 2)

Date	Age	Beg. Year Risk Adjusted Head Count	Mortality Risk [1]	Retirement Risk [1]	Turnover Risk [1]	Disability Risk [1]	Total Retention Risk
		(7)	(8)	(9)	(10)	(11)	(12) = (8) + (9) + (10) + (11)
1/1/2001	23	1.000000	0.042%	0.000%	10.000%	0.093%	10.135%
1/1/2002	24	0.898646	0.044%	0.000%	10.000%	0.093%	10.137%
1/1/2003	25	0.807547	0.046%	0.000%	10.000%	0.133%	10.179%
1/1/2004	26	0.725343	0.049%	0.000%	10.000%	0.133%	10.182%
1/1/2005	27	0.651490	0.051%	0.000%	10.000%	0.133%	10.184%
1/1/2006	28	0.585141	0.054%	0.000%	9.500%	0.133%	9.687%
1/1/2007	29	0.528457	0.057%	0.000%	9.500%	0.133%	9.690%
1/1/2008	30	0.477248	0.061%	0.000%	9.000%	0.198%	9.259%
1/1/2009	31	0.433061	0.065%	0.000%	9.000%	0.198%	9.263%
1/1/2010	32	0.392949	0.069%	0.000%	8.500%	0.198%	8.767%
1/1/2011	33	0.358500	0.073%	0.000%	8.000%	0.198%	8.271%
1/1/2012	34	0.328847	0.079%	0.000%	7.500%	0.198%	7.777%
1/1/2013	35	0.303275	0.086%	0.000%	7.000%	0.283%	7.369%
1/1/2014	36	0.280926	0.091%	0.000%	6.500%	0.283%	6.874%
1/1/2015	37	0.261616	0.097%	0.000%	6.000%	0.283%	6.380%
1/1/2016	38	0.244926	0.104%	0.000%	5.500%	0.283%	5.887%
1/1/2017	39	0.230508	0.113%	0.000%	5.000%	0.283%	5.396%
1/1/2018	40	0.218070	0.124%	0.000%	4.500%	0.390%	5.014%
1/1/2019	41	0.207136	0.137%	0.000%	4.000%	0.390%	4.527%
1/1/2020	42	0.197759	0.153%	0.000%	3.500%	0.390%	4.043%
1/1/2021	43	0.189764	0.172%	0.000%	3.000%	0.390%	3.562%
1/1/2022	44	0.183006	0.193%	0.000%	2.500%	0.390%	3.083%
1/1/2023	45	0.177363	0.218%	0.000%	2.000%	0.527%	2.745%
1/1/2024	46	0.172494	0.247%	0.000%	2.000%	0.527%	2.774%
1/1/2025	47	0.167709	0.279%	0.000%	2.000%	0.527%	2.806%
1/1/2026	48	0.163003	0.314%	0.000%	2.000%	0.527%	2.841%
1/1/2027	49	0.158373	0.351%	0.000%	2.000%	0.527%	2.878%
1/1/2028	50	0.153814	0.391%	5.000%	0.000%	0.849%	6.240%
1/1/2029	51	0.144216	0.432%	5.500%	0.000%	0.849%	6.781%
1/1/2030	52	0.134436	0.476%	6.000%	0.000%	0.849%	7.325%
1/1/2031	53	0.124590	0.520%	6.500%	0.000%	0.849%	7.869%
1/1/2032	54	0.114786	0.566%	7.000%	0.000%	0.849%	8.415%
1/1/2033	55	0.105126	0.613%	7.500%	0.000%	1.398%	9.511%
1/1/2034	56	0.095128	0.662%	8.000%	0.000%	1.398%	10.060%
1/1/2035	57	0.085558	0.714%	8.500%	0.000%	1.398%	10.612%
1/1/2036	58	0.076479	0.772%	9.000%	0.000%	1.398%	11.170%
1/1/2037	59	0.067936	0.838%	9.500%	0.000%	1.398%	11.736%
1/1/2038	60	0.059963	0.916%	10.000%	0.000%	1.552%	12.468%
1/1/2039	61	0.052487	1.006%	20.000%	0.000%	1.552%	22.558%
1/1/2040	62	0.040647	1.113%	30.000%	0.000%	1.552%	32.665%
1/1/2041	63	0.027369	1.239%	40.000%	0.000%	1.552%	42.791%
1/1/2042	64	0.015658	1.387%	50.000%	0.000%	1.552%	52.939%
1/1/2043	65	0.007369	1.559%	100.000%	0.000%	0.835%	100.000%
Total		10.648721					

[1] Figure 7D shows the decrement rates used in this calculation

Figure 7C-1. Sample Calculation of Evi for Employee 1 (page 3)

Date	Age	Expected Cost $E(C_n)$	Expected Revenue $E(R_n)$	Expected Profit $E(P_n)$	Discount Factor	Discounted Expected Cost	Discounted Expected Revenue	Discounted Expected Profit
		(13) = (3) x (7) x [1 - (12)]	(14) = (6) x (7) x [1 - (12)]	(15) = (14) - (13)	(16)	(17) = (13) x (16)	(18) = (14) x (16)	(19) = (18) - (17)
1/1/2001	23	$44,932	$70,094	$25,162	1.0000	$44,932	$70,094	$25,162
1/1/2002	24	$42,800	$75,328	$32,528	0.9091	$38,909	$68,480	$29,571
1/1/2003	25	$40,750	$79,869	$39,120	0.8264	$33,677	$66,008	$32,330
1/1/2004	26	$38,797	$77,562	$38,766	0.7513	$29,149	$58,274	$29,125
1/1/2005	27	$36,936	$75,320	$38,384	0.6830	$25,228	$51,444	$26,217
1/1/2006	28	$35,360	$73,547	$38,187	0.6209	$21,956	$45,667	$23,711
1/1/2007	29	$33,849	$71,813	$37,964	0.5645	$19,107	$40,537	$21,430
1/1/2008	30	$32,558	$70,456	$37,898	0.5132	$16,707	$36,155	$19,447
1/1/2009	31	$31,315	$69,121	$37,806	0.4665	$14,609	$32,245	$17,637
1/1/2010	32	$30,284	$68,182	$37,898	0.4241	$12,843	$28,916	$16,072
1/1/2011	33	$29,446	$67,621	$38,175	0.3855	$11,353	$26,071	$14,718
1/1/2012	34	$28,785	$67,426	$38,641	0.3505	$10,089	$23,632	$13,543
1/1/2013	35	$28,264	$67,529	$39,265	0.3186	$9,006	$21,517	$12,511
1/1/2014	36	$27,900	$67,994	$40,093	0.2897	$8,082	$19,695	$11,614
1/1/2015	37	$27,688	$68,825	$41,137	0.2633	$7,291	$18,124	$10,833
1/1/2016	38	$27,621	$70,033	$42,412	0.2394	$6,612	$16,765	$10,153
1/1/2017	39	$27,699	$71,634	$43,935	0 2176	$6,028	$15,590	$9,562
1/1/2018	40	$27,889	$73,567	$45,679	0.1978	$5,518	$14,555	$9,037
1/1/2019	41	$28,224	$75,940	$47,716	0.1799	$5,076	$13,658	$8,582
1/1/2020	42	$28,708	$78,787	$50,080	0.1635	$4,694	$12,882	$8,188
1/1/2021	43	$29,346	$82,151	$52,804	0.1486	$4,362	$12,211	$7,849
1/1/2022	44	$30,148	$86,083	$55,935	0.1351	$4,074	$11,632	$7,559
1/1/2023	45	$31,079	$90,518	$59,438	0.1228	$3,818	$11,120	$7,302
1/1/2024	46	$32,030	$95,153	$63,122	0.1117	$3,577	$10,626	$7,049
1/1/2025	47	$32,999	$99,992	$66,993	0.1015	$3,350	$10,152	$6,801
1/1/2026	48	$33,986	$105,040	$71,055	0 0923	$3,137	$9,695	$6,558
1/1/2027	49	$34,988	$110,301	$75,313	0.0839	$2,936	$9,255	$6,319
1/1/2028	50	$34,773	$111,816	$77,043	0.0763	$2,652	$8,529	$5,877
1/1/2029	51	$34,360	$112,697	$78,337	0.0693	$2,383	$7,815	$5,432
1/1/2030	52	$33,754	$112,923	$79,169	0.0630	$2,128	$7,119	$4,991
1/1/2031	53	$32,964	$112,485	$79,521	0.0573	$1,889	$6,446	$4,557
1/1/2032	54	$32,001	$111,384	$79,383	0.0521	$1,667	$5,803	$4,136
1/1/2033	55	$30,695	$108,975	$78,280	0.0474	$1,454	$5,161	$3,708
1/1/2034	56	$29,263	$105,971	$76,707	0.0431	$1,260	$4,563	$3,303
1/1/2035	57	$27,727	$102,417	$74,689	0 0391	$1,085	$4,009	$2,924
1/1/2036	58	$26,108	$98,364	$72,256	0.0356	$929	$3,500	$2,571
1/1/2037	59	$24,427	$93,870	$69,443	0.0323	$790	$3,037	$2,246
1/1/2038	60	$22,664	$88,838	$66,174	0.0294	$667	$2,613	$1,946
1/1/2039	61	$18,604	$74,384	$55,780	0.0267	$497	$1,989	$1,491
1/1/2040	62	$13,279	$54,153	$40,874	0.0243	$323	$1,316	$993
1/1/2041	63	$8,053	$33,496	$25,444	0.0221	$178	$740	$562
1/1/2042	64	$4,017	$17,044	$13,027	0.0201	$81	$342	$262
1/1/2043	65	$0	$0	$0	0.0183	$0	$0	$0
Total						$374,102	$817,982	$443,880
iRevenue			$817,982					
iCost			$374,102					
Evi = iRevenue - iCost			$443,880					
EWL			10 648721					
Annual EVi= Evi / EWL			$41,684					

Figure 7C-2. Sample Calculation of EVi for Employee 2 (page 1)

Date	Age	Service	Annual Salary (1)	Salary Increase	Wage Salary Multiple (2)	Wage (3) = (1) x (2)	Productivity Factor (4)	Wage Load Factor ARWLF (5)	Minimum Revenu Potentia (6) = (3) x (4) x (5)
1/1/2001	44	5	$76,923	0.06	1.30	$100,000	1.00	1.980	$198,00
1/1/2002	45	6	$81,538	0.06	1.30	$106,000	1.00	2.060	$218,36
1/1/2003	46	7	$86,431	0.06	1.30	$112,360	1.00	2.130	$239,32
1/1/2004	47	8	$91,617	0.06	1.30	$119,102	1.00	2.173	$258,76
1/1/2005	48	9	$97,114	0.06	1.30	$126,248	1.00	2.216	$279,77
1/1/2006	49	10	$102,940	0.06	1.30	$133,823	1.00	2.260	$302,48
1/1/2007	50	11	$109,117	0.06	1.30	$141,852	1.00	2.306	$327,05
1/1/2008	51	12	$115,664	0.06	1.30	$150,363	1.00	2.352	$353,60
1/1/2009	52	13	$122,604	0.06	1.30	$159,385	1.00	2.399	$382,32
1/1/2010	53	14	$129,960	0.06	1.30	$168,948	1.00	2.447	$413,36
1/1/2011	54	15	$137,758	0.06	1.30	$179,085	1.00	2.496	$446,93
1/1/2012	55	16	$146,023	0.06	1.30	$189,830	1.00	2.546	$483,22
1/1/2013	56	17	$154,784	0.06	1.30	$201,220	1.00	2.596	$522,45
1/1/2014	57	18	$164,071	0.06	1.30	$213,293	1.00	2.648	$564,88
1/1/2015	58	19	$173,916	0.06	1.30	$226,090	1.00	2.701	$610,75
1/1/2016	59	20	$184,351	0.06	1.30	$239,656	1.00	2.755	$660,34
1/1/2017	60	21	$195,412	0.06	1.30	$254,035	1.00	2.810	$713,96
1/1/2018	61	22	$207,136	0.06	1.30	$269,277	1.00	2.867	$771,93
1/1/2019	62	23	$219,565	0.06	1.30	$285,434	1.00	2.924	$834,61
1/1/2020	63	24	$232,738	0.06	1.30	$302,560	1.00	2.983	$902,39
1/1/2021	64	25	$246,703	0.06	1.30	$320,714	1.00	3.042	$975,66
1/1/2022	65	26	$0	0.06	1.30	$0	1.00	3.103	$

Figure 7C-2. Sample Calculation of EVi for Employee 2 (page 2)

Date	Age	Beg. Year Risk Adjusted Head Count	Mortality Risk [1]	Retirement Risk [1]	Turnover Risk [1]	Disability Risk [1]	Total Retention Risk
		(7)	(8)	(9)	(10)	(11)	(12) = (8) + (9) + (10) + (11)
1/1/2001	44	1.000000	0.092%	0.000%	2.500%	0.390%	2.982%
1/1/2002	45	0.970181	0.101%	0.000%	2.000%	0.527%	2.628%
1/1/2003	46	0.944685	0.112%	0.000%	2.000%	0.527%	2.639%
1/1/2004	47	0.919757	0.124%	0.000%	2.000%	0.527%	2.651%
1/1/2005	48	0.895377	0.137%	0.000%	2.000%	0.527%	2.664%
1/1/2006	49	0.871528	0.151%	0.000%	2.000%	0.527%	2.678%
1/1/2007	50	0.848193	0.165%	5.000%	0.000%	0.849%	6.014%
1/1/2008	51	0.797185	0.179%	5.500%	0.000%	0.849%	6.528%
1/1/2009	52	0.745142	0.195%	6.000%	0.000%	0.849%	7.044%
1/1/2010	53	0.692655	0.212%	6.500%	0.000%	0.849%	7.561%
1/1/2011	54	0.640284	0.232%	7.000%	0.000%	0.849%	8.081%
1/1/2012	55	0.588546	0.254%	7.500%	0.000%	1.398%	9.152%
1/1/2013	56	0.534681	0.280%	8.000%	0.000%	1.398%	9.678%
1/1/2014	57	0.482933	0.310%	8.500%	0.000%	1.398%	10.208%
1/1/2015	58	0.433634	0.344%	9.000%	0.000%	1.398%	10.742%
1/1/2016	59	0.387052	0.382%	9.500%	0.000%	1.398%	11.280%
1/1/2017	60	0.343392	0.424%	10.000%	0.000%	1.552%	11.976%
1/1/2018	61	0.302267	0.470%	20.000%	0.000%	1.552%	22.022%
1/1/2019	62	0.235701	0.521%	30.000%	0.000%	1.552%	32.073%
1/1/2020	63	0.160104	0.577%	40.000%	0.000%	1.552%	42.129%
1/1/2021	64	0.092654	0.639%	50.000%	0.000%	1.552%	52.191%
1/1/2022	65	0.044297	0.706%	100.000%	0.000%	0.835%	100.000%
Total		11.930249					

[1] Figure 7D shows the decrement rates used in this calculation

Figure 7C-2. Sample Calculation of EVi for Employee 2 (page 3)

Date	Age	Expected Cost $E(C_n)$	Expected Revenue $E(R_n)$	Expected Profit $E(P_n)$	Discount Factor	Discounted Expected Cost	Discounted Expected Revenue	Discounted Expected Profit
		(13) = (3) x (7) x [1 - (12)]	(14) = (6) x (7) x [1 - (12)]	(15) = (14) - (13)	(16)	(17) = (13) x (16)	(18) = (14) x (16)	(19) = (18) x (17)
1/1/2001	44	$97,018	$192,096	$95,078	1.0000	$97,018	$192,096	$95,078
1/1/2002	45	$100,137	$206,281	$106,145	0.9091	$91,033	$187,529	$96,495
1/1/2003	46	$103,344	$220,123	$116,779	0.8264	$85,408	$181,920	$96,511
1/1/2004	47	$106,641	$231,688	$125,047	0.7513	$80,121	$174,071	$93,950
1/1/2005	48	$110,028	$243,829	$133,800	0.6830	$75,151	$166,538	$91,387
1/1/2006	49	$113,507	$256,569	$143,062	0.6209	$70,479	$159,309	$88,830
1/1/2007	50	$113,082	$260,720	$147,638	0.5645	$63,832	$147,170	$83,338
1/1/2008	51	$112,042	$263,488	$151,446	0.5132	$57,495	$135,211	$77,716
1/1/2009	52	$110,399	$264,816	$154,418	0 4665	$51,502	$123,539	$72,037
1/1/2010	53	$108,175	$264,671	$156,496	0.4241	$45,877	$112,246	$66,370
1/1/2011	54	$105,400	$263,039	$157,639	0.3855	$40,636	$101,413	$60,777
1/1/2012	55	$101,498	$258,369	$156,871	0.3505	$35,575	$90,557	$54,982
1/1/2013	56	$97,176	$252,313	$155,137	0.3186	$30,963	$80,395	$49,431
1/1/2014	57	$92,491	$244,952	$152,461	0.2897	$26,791	$70,954	$44,163
1/1/2015	58	$87,509	$236,392	$148,883	0.2633	$23,044	$62,249	$39,206
1/1/2016	59	$82,296	$226,757	$144,461	0.2394	$19,701	$54,284	$34,583
1/1/2017	60	$76,786	$215,808	$139,021	0.2176	$16,711	$46,966	$30,255
1/1/2018	61	$63,469	$181,946	$118,477	0.1978	$12,557	$35,997	$23,440
1/1/2019	62	$45,699	$133,626	$87,927	0.1799	$8,219	$24,034	$15,814
1/1/2020	63	$28,033	$83,610	$55,577	0.1635	$4,584	$13,671	$9,087
1/1/2021	64	$14,207	$43,219	$29,013	0.1486	$2,112	$6,424	$4,313
1/1/2022	65	$0	$0	$0	0.1351	$0	$0	$0
Total						$938,809	$2,166,571	$1,227,762
iRevenue			$2,166,571					
iCost			$938,809					
Evi = iRevenue - iCost			$1,227,762					
EWL			11.930249					
Annual EVi = Evi / EWL			$102,912					

Figure 7D. Decrement Rates used in the sample EVi Calculation

Retirement Rates		Turnover Rates					Disability Rates	
			Service					
Age	Rate	Age	0	1	2	>=3	Age	Rate
0	0.000	0	0.3	0.2	0.15	0.100	15 - 19	0.00032
50	0.050	25	0.3	0.2	0.15	0.100	20 - 24	0.00093
51	0.055	26	0.3	0.2	0.15	0.100	25 - 29	0.00133
52	0.060	27	0.3	0.2	0.15	0.100	30 - 34	0.00198
53	0.065	28	0.285	0.19	0.1425	0.095	35 - 39	0.00283
54	0.070	29	0.285	0.19	0.1425	0.095	40 - 44	0.00390
55	0.075	30	0.27	0.18	0.135	0.090	45 - 49	0.00527
56	0.080	31	0.27	0.18	0.135	0.090	50 - 54	0.00848
57	0.085	32	0.255	0.17	0.1275	0.085	55 - 59	0.01398
58	0.090	33	0.24	0.16	0.12	0.080	60 - 64	0.01552
59	0.095	34	0.225	0.15	0.1125	0.075	60+	0.00835
60	0.100	35	0.21	0.14	0.105	0.070		
61	0.200	36	0.195	0.13	0.0975	0.065		
62	0.300	37	0.18	0.12	0.09	0.060		
63	0.400	38	0.165	0.11	0.0825	0.055		
64	0.500	39	0.15	0.1	0.075	0.050		
65	1.000	40	0.135	0.09	0.0675	0.045		
		41	0.12	0.08	0.06	0.040		
		42	0.105	0.07	0.0525	0.035		
		43	0.09	0.06	0.045	0.030		
		44	0.075	0.05	0.0375	0.025		
		45	0.06	0.04	0.03	0.020		
		50+	0	0	0	0.000		

Mortality Rate is Group Annuity Table 1983 with margin for males and females

Figure 7E. Probability of promotion from Job Level 1 to Job Level 2 (or Job Level 2 to Job Level 3)											
	Svc in current job level										
Age	0	1	2	3	4	5	6	7	8	9	10
20	0.01										
21	0.02	0.10									
22	0.03	0.11	0.15								
23	0.04	0.12	0.16	0.20							
24	0.05	0.13	0.17	0.21	0.25						
25	0.06	0.14	0.18	0.22	0.26	0.35					
26	0.07	0.15	0.19	0.23	0.27	0.36	0.50				
27	0.08	0.16	0.20	0.24	0.28	0.37	0.51	0.70			
28	0.09	0.17	0.21	0.25	0.29	0.38	0.52	0.71	0.50		
29	0.10	0.18	0.22	0.26	0.30	0.39	0.53	0.72	0.51	0.30	
30+	0.10	0.18	0.27	0.46	0.65	0.84	0.83	0.72	0.51	0.30	0.00

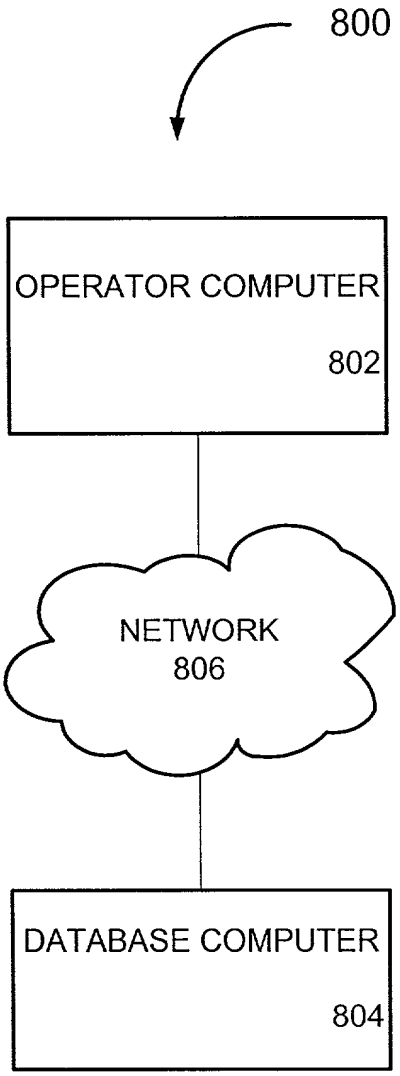
800
OPERATOR COMPUTER
802
NETWORK
806
DATABASE COMPUTER
804

FIG. 8

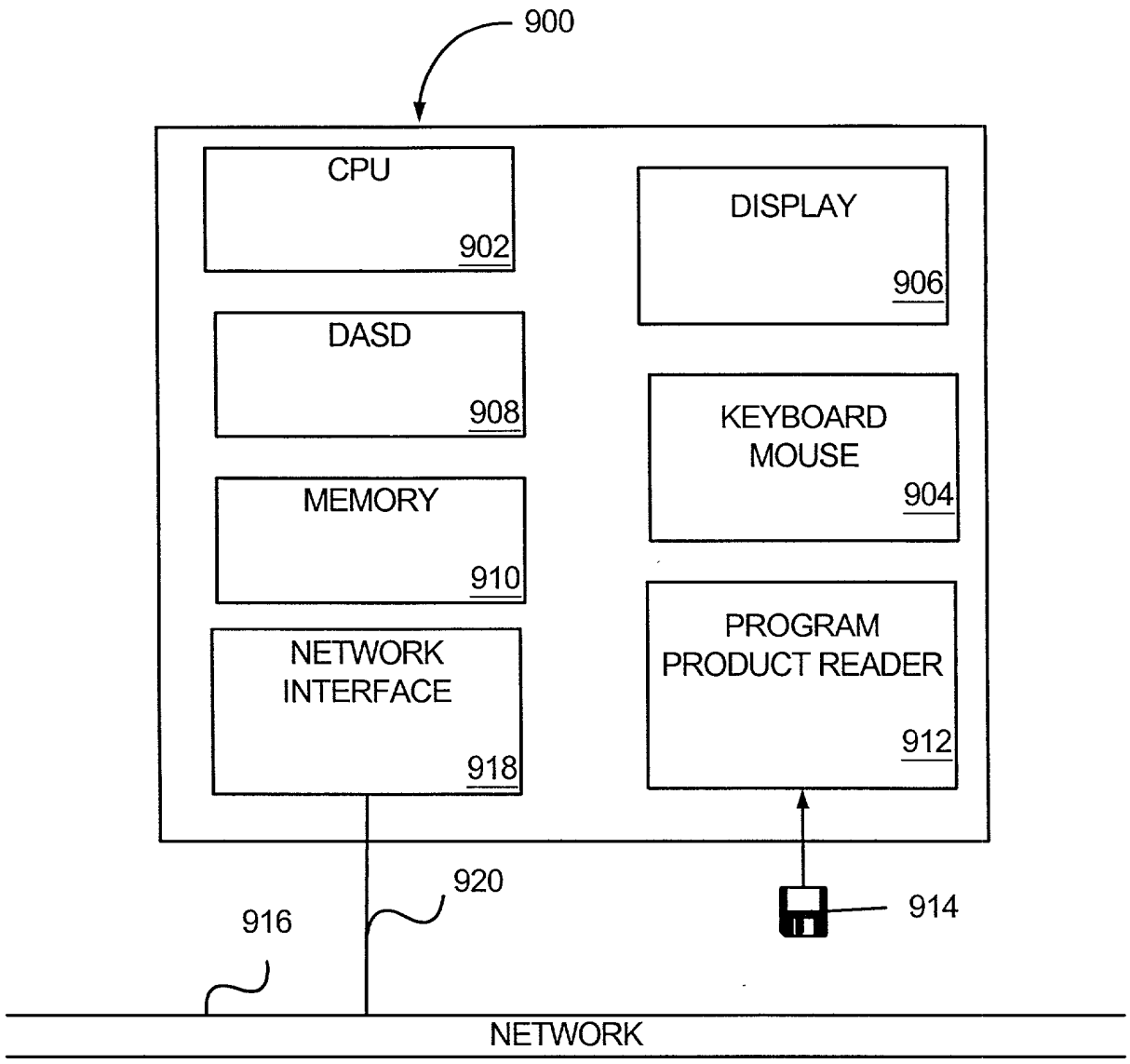
900
CPU
902
DISPLAY
906
DASD
908
KEYBOARD
MOUSE
904
MEMORY
910
PROGRAM
PRODUCT READER
912
NETWORK
INTERFACE
918
920
916
914
NETWORK

FIG. 9